DOCUMENT RESUME

ED 139 540 PS 009 304

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TITLE	Antecedents of Emotional Involvement in Mothers of Premature and Fullterm Infants.
SPONS AGENCY	National Inst. of Mental Health (DHEW), Rockville, Md. Center for Studies of Crime and Delinquency.
PUB DATE	Mar 77
GRANT	NIMH-MH-26131
NOTE	11p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (New Orleans, Louisiana, March 17-20, 1977)
EDRS PRICE	MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS	Academic Achievement; Blacks; *Emotional Response; Individual Characteristics; Infant Behavior; *Infants; Low Income; *Mothers; *Parent Child Relationship; *Premature Infants; *Social Development

ABSTRACT

This study examined differences between premature and fullterm infants and their mothers in three areas: infant characteristics, early mother-infant interaction and mothers' emotional involvement when the child was 9 months old. Forty-nine low-income black mothers and their infants (26 prematures, 23 fullterms) participated in the study. In general it was found that maternal education was the best single predictor of maternal involvement at 9 months. However, when education and maternal persistence were controlled for, the condition of the baby at birth was the best predictor of maternal involvement at 9 months. Mothers of prematures were more persistent, emitting more behaviors in the absence of any response from their babies than mothers of fullterms, but they were less emotionally involved with their babies at 9 months than mothers of fullterm babies. (MS)

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Antecedents of Emotional Involvement in Mothers of Premature and Fullterm Infants

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PS 009304

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Paper presented at the Biennial Meeting of the Society for Research in Child Development, New Orleans, March 1977. This work was supported by Grant No. MH26131 awarded by the Center for the Study of Crime and Delinquency, National Institute of Mental Health, DHEW.

Antecedents of Emotional Involvement in Mothers of Premature and Fullterm Infants

Prematurely born infants differ from infants born at term in several important ways. They often look unattractive, they emit very few of the normal newborn's "social" behaviors, and they are typically separated from their mothers for a prolonged period following birth--a time which is thought to be especially important for the development of the attachment of a mother to her infant (see, for instance, Barnett, et al., 1970; Leifer, at al., 1972).

It has been speculated that because of these conditions prematures are at risk for later abuse and neglect--extreme forms of a breakdown in the mother-infant relationship. Support for this notion is taken from reports in the literature that indicate that prematurely born children are typically over represented among those that are abused and neglected. Although these findings suggest that the early experiences of the premature and his mother may indeed be less than optimal, they are nevertheless based on retrospective studies. In order to trace the effects of these possibly adverse conditions Roger Bakeman and I decided to study the development of the relationship between mothers and their premature infants. Specifically, we wanted to study the effect of infant characteristics on the development of the mother-infant interaction during the first year of life of a group of premature and fullterm infants and their mothers. The mothers and infants in our study were sampled from a low-income, black, inner-city population because that is the predominant population in the

hospital with which we are affiliated.

In this paper I will examine whether maternal emotional involvement at nine months can be predicted from three factors: (1) the condition of the infant--premature vs. fullterm; (2) maternal persistence--which we gauged by the amount of time the mother spent in directing behaviors to her infant in the absence of an infant response during a half-hour feeding observation; and (3) maternal education, a measure that can be regarded as an indicator of the general social background of the mother.

Method

Subjects were 32 premature and 24 fullterm infants and their mothers; mean gestational ages were 32 and 40 weeks and the mean birthweights were approximately 1600 and 3200 grams respectively. Excluded from the sample were prematures who weighed less than 1000g or who evidenced gross physical or neurological damage and fullterms who had substantial perinatal complications. During the first year three prematures died and three mothers of prematures and one of a fullterm left the project, so the data reported here are based on 26 premature and 23 fullterm mother-infant dyads.

Procedure and Results

Although extensive longitudinal data on the infants and the mother-infant interactions were collected, only procedures and data relevant to this report will be discussed here.

Before I examine the antecedents of maternal emotional involvement, I want to report the values of the individual variables--infant condition, maternal persistence, maternal education, and emotional involvement.

Infant condition. Although for the purpose of this paper infants are simply classified as premature or fullterm, it still seems worthwhile to report the chronological and conceptional ages of the infants at the time of the observation. At that time the chronological age of the prematures was about 3 1/2 weeks (range 1-8 weeks) and their conceptional age was about 35 1/2 weeks (range 29-44 weeks). The conceptional age of the three-day-old fullterms was 40 weeks (range 37-42 weeks).

Educational level. Prior to the mother's discharge from the hospital information was collected from her with respect to her level of education. The educational level of the mothers of prematures and fullterms did not differ. About 75% of all mothers had completed at least some high school.

Maternal persistence. When the fullterm infants were 3 days old or the prematures had reached a weight of about 2000g and were ready to go home, they and their mothers were observed during a 30-minute feeding. Some 140 specific, concrete, and detailed behaviors (see Brown & Bakeman, Note 1) were recorded by two observers--one recorded maternal behaviors and the other recorded infant behaviors. The observers used electronic recording devices (Datamyte, Model DAK-8C) which were yoked to a common clock. The observation data preserved the frequency, the duration, and the co-occurrence of all behaviors.

Forty-six of the specific maternal behaviors were redefined as "mother communicative acts" and 32 infant behaviors were redefined as "infant communicative acts." For each successive 5-sec interval of the 30-minute observation it was noted whether the infant acted alone, the mother acted alone, both acted, or neither acted. The percentage of 5-sec intervals during which the mother acted alone, i.e., directed one or more

communicative acts to the infant in the absence of behavior on the part of her infant, was used as an index of maternal persistence. Mother communicative acts included such behaviors as rocking, rubbing, patting, poking, vocalizing, smiling, offering bottle, etc. Mothers of prematures acted alone 55% of the time which was significantly more than mothers of fullterms, who persisted 41% of the time (see Table 1).

Emotional involvement. Nine months after the infants were discharged from the hospital, the social worker on our staff visited the mothers and infants at home and administered the HOME Scale (see Elardo, et al., 1975, 1976). This instrument was designed to assess the quality and quantity of social, emotional, and cognitive support available to the child in the home setting. The first subscale of the HOME, "emotional and verbal responsivity of mother," was used as the index of emotional involvement. This scale includes such items as "mother spontaneously vocalizes to child at least twice during visit (excluding scolding)," and "mother shows some positive emotional response to praise of child offered by visitor." The highest possible score on this scale is 11. Mothers of prematures scored significantly lower on this scale than mothers of fullterms (Mean = 8.53, sd = 1.58 vs. Mean = 9.69, sd = 1.15; $p < .005$).

Infant condition, maternal education, maternal persistence and emotional involvement at nine months. Let me summarize the findings so far: mothers of prematures and of fullterms did not differ with respect to education. Mothers of prematures were more persistent with their infants in the hospital and were less emotionally involved with them at nine months. These findings, however, are based on group differences. Now let us consider the relationship between these variables.

The path diagram (Fig. 1) illustrates the relationships we assume to exist between infant condition, maternal education, maternal persistence, and emotional involvement. The path coefficients indicate the relative importance of infant condition, maternal education, and maternal persistence for predicting emotional involvement. Incidentally, when emotional involvement was predicted from the other three variables, the equation was significant ($F = 8.06$, $df = 3/45$, $p < .01$) and accounted for 35% of the variance in the emotional involvement scores.

The relationships among the variables can be summarized as follows:

(1) Although maternal education is not the best predictor of her emotional involvement when infant condition and maternal persistence have been controlled for, education is still the best single predictor of maternal emotional involvement at nine months (simple $r = .449$, $p < .005$). This is the case for mothers of premature as well as for mothers of full-term babies (simple $r = .389$ and $.408$ for prematures and fullterms respectively).

(2) The condition of the baby at birth, however, is the best predictor of maternal involvement at nine months when the effects of education and persistence have been controlled for.

(3) As we already knew from the group differences, mothers of prematures are more persistent, they emit more behaviors in the absence of any response from their babies than mothers of fullterms.

Our first thought was to assume that expending so much effort while the baby does not respond would be somewhat aversive and so we expected that mothers who had to work harder might be turned off and would be less emotionally involved with their infants. However, we see from the path

diagram that persistence is a positive predictor of emotional involvement. But this positive relationship is almost totally due to mothers of prematures. The simple correlation between maternal persistence and emotional responsivity for the prematures is .367 while that for the fullterms is .179.

Discussion

Now, what are the implications of these findings? First of all, it is the case that mothers of premature babies are less emotionally involved with their infants at nine months than are mothers of fullterms. As you will recall the premature infants were developmentally about one month younger than the fullterm infants and it could be that their relative lack of maturity accounts for the differences we found. This possibility can not be excluded at this time. We choose to equate for the amount of experience mothers had with their infants rather than for the infants' conceptional ages. Currently we are collecting data at 20 months conceptional age with the hope of untangling this possible confound. The findings reported in this paper, however, do suggest that the attachment of a mother with her premature infant may be less than optimal.

Second, for healthy fullterm babies maternal persistence does not predict emotional involvement. Effort seems to be predictive of involvement only for problem babies. While my cognitive dissonance colleagues may be heartened by this result, my own feeling is that maternal persistence is simply an early indicator of emotional involvement at least for mothers of problem babies.

These findings have practical implications for the management of prematures and their mothers and possibly for the prevention of child

abuse and neglect. If the baby is premature and the mother's level of education is relatively low and one observes a lack of persistence on the part of the mother when she interacts with her baby one should be concerned about this mother-infant dyad. So I would suggest that it is crucial to observe a mother with her premature infant before that infant is discharged, especially when the mother has a poor educational background such as is the case in many big city hospitals.

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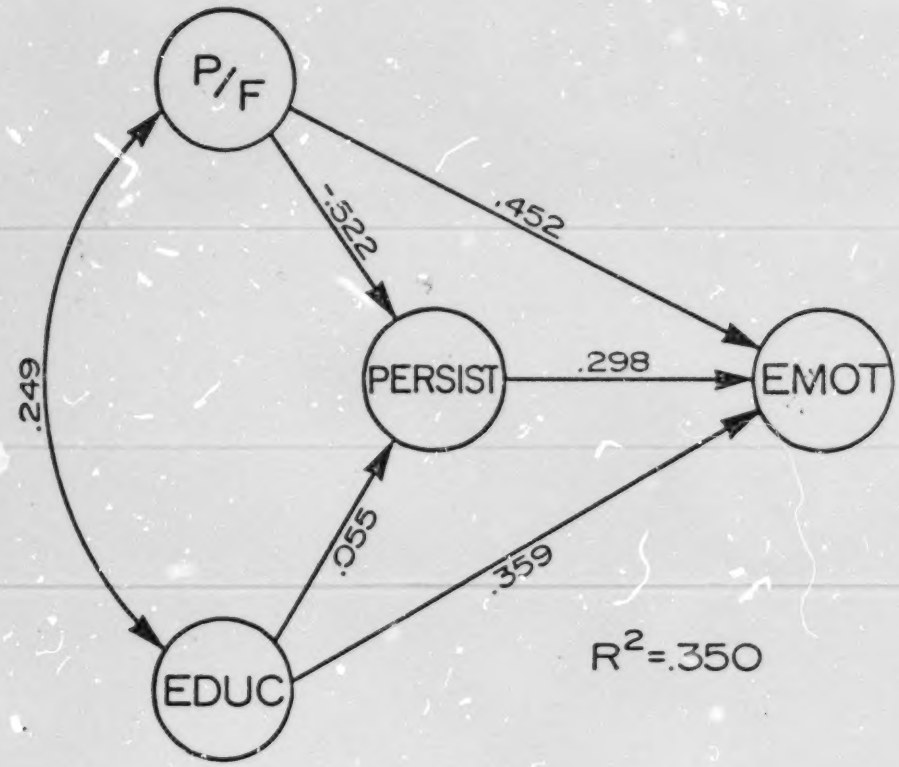
Table 1

Percentage of 5-second Intervals Spent in Each Dyadic State During a 30-minute Observation Session Just Before Hospital Discharge

	prematures (N = 26)	fullterms (N = 23)	p[a]
Infant acts alone	5.4	8.8	.01
Mother and infant act	17.5	18.1	ns
Mother acts alone	54.9	40.5	.001
Neither act	22.2	32.6	.01
Total	100.0	100.0	

[a] As determined by a two-tailed t-test.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EDUC
R^2=.350